



# Welcome

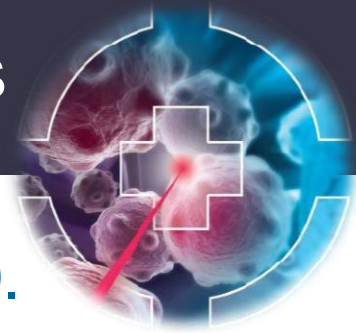
## OMA Advanced School on *Medical Accelerators and Particle Therapy*

**Samantha J. Colosimo**  
University of Liverpool / Cockcroft Institute





# Optimisation of Medical Accelerators



- Funding from the European Union's Horizon 2020.
- 15 Marie Curie Fellows
- 4 years; started in Feb 2016
- Gives industry an important role in training the next generation of scientists.
- Allows for organizing a number of events.
- Recognized importance of R&D at interface between physics and life sciences *at European level*.



# Research Overview



*Develop beyond state-of-the-art detector and imaging systems for particle therapy; improve patient treatment and facility performance*

## Work Packages:



- Facility Design and Optimisation



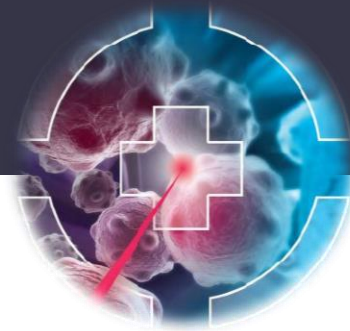
- Beam Imaging and Diagnostics



- Treatment Optimisation



# Beneficiaries



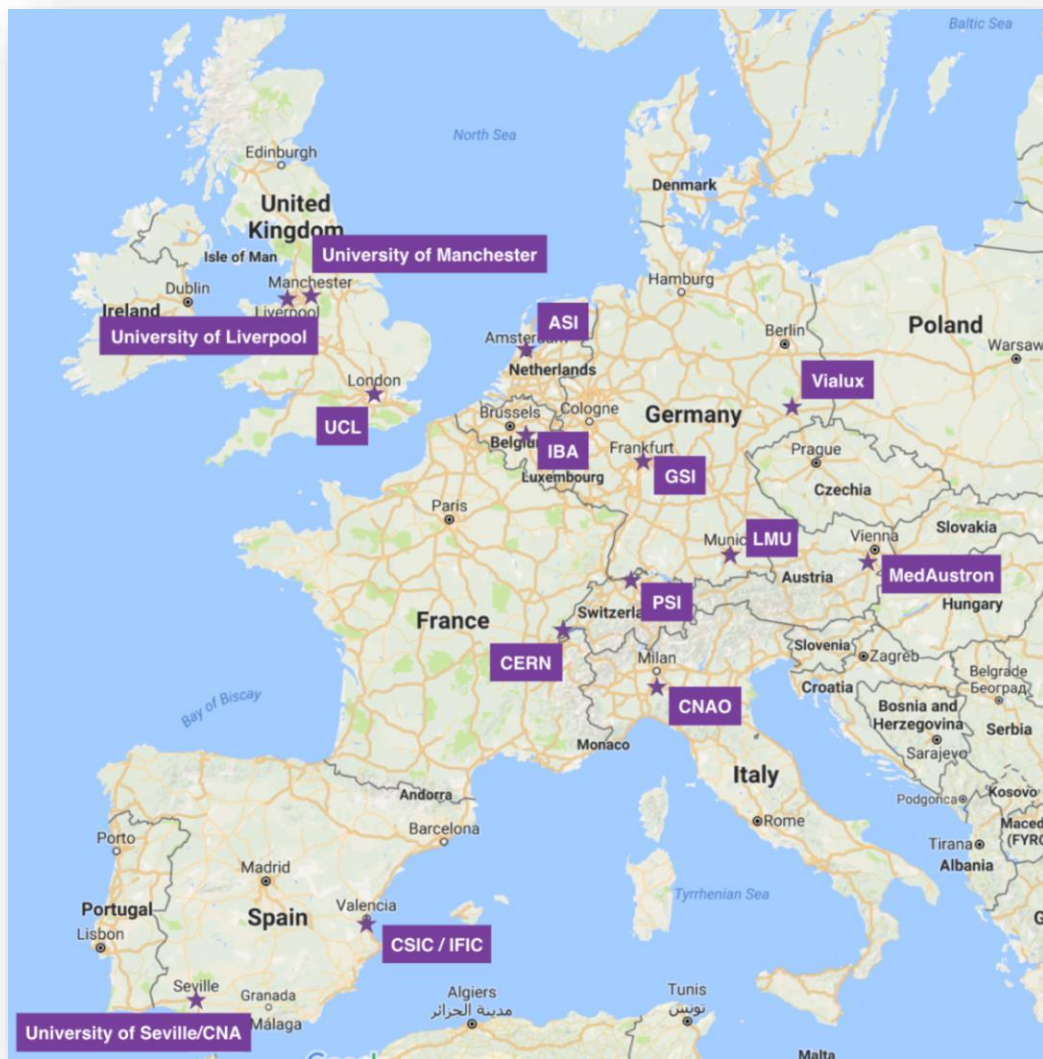
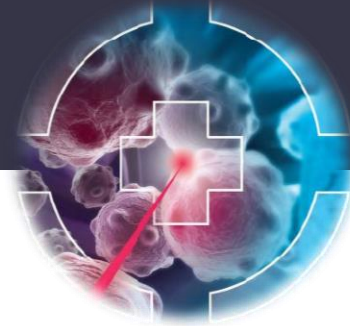
The University of Manchester





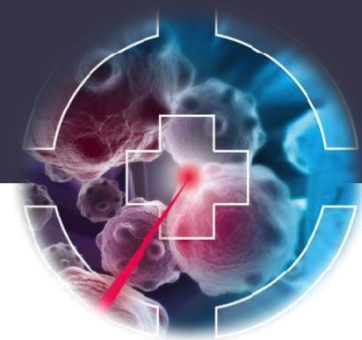


# Overview





# Partner Organizations



The Clatterbridge Cancer Centre **NHS**  
NHS Foundation Trust

The Christie **NHS**  
NHS Foundation Trust

**Fistral**  
Training and Consultancy Ltd.

**h<sub>α</sub>** Holdsworth  
Associates

**COSYLAB**  
CONTROL SYSTEM LABORATORY

**nwc**  
NORTH WEST COAST  
ACADEMIC HEALTH  
SCIENCE NETWORK

**INFN**

**INVENTYA**  
your success, our commitment

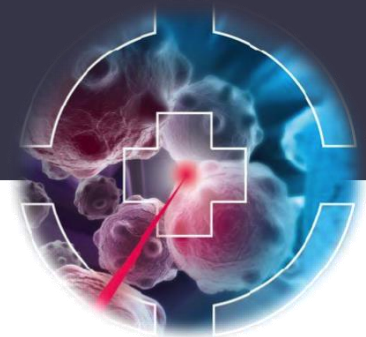
**Science & Technology  
Facilities Council**

**Intellectual  
Property  
Office**

**Lancaster  
University**



# Growing our Network



## ■ Adjunct Partners



Imperial College  
London

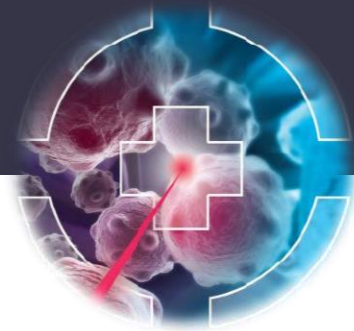


UNIVERSITY OF  
LIVERPOOL

S.J. Colosimo – Advanced School on Medical Accelerators and Particle Therapy– 1st April 2019







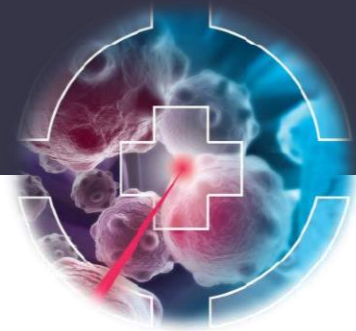
- **International Schools** on research skills, medical accelerators and Monte Carlo simulations;
- **Topical Workshops** on focused research work packages;
- **Symposium and Conference** to present project results.







# Upcoming OMA Events

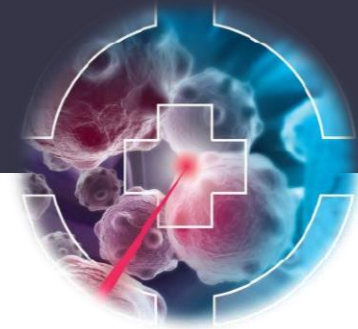


- **Advanced Researcher Skills Workshop**
  - Program will develop career skills for academia and industry
  - University of Liverpool, Liverpool, 24-27<sup>th</sup> June 2019
- **Accelerators for Science and Society Symposium**
  - Outreach to 300 high school students
  - Liverpool, 28<sup>th</sup> June 2019
- **International Conference on Medical Accelerators and Particle Therapy**
  - US/CNA, Seville, 4<sup>th</sup>-6<sup>th</sup> September 2019





# Project Website



■ ([http://www.](http://www.oma-project.eu)) **oma-project.eu**

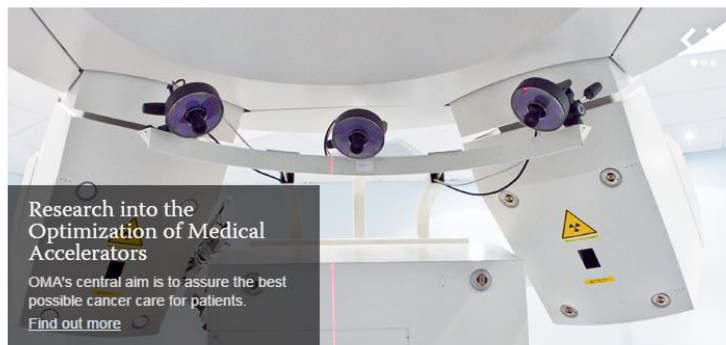


OPTIMIZATION OF MEDICAL  
ACCELERATORS PROJECT

Search

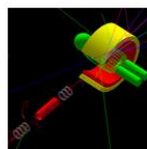
- Optimization of Medical Accelerators Project
- About us
- Network Structure
- Projects >
- Vacancies
- News
- Events
- Dissemination
- Press
- Downloads
- Links
- EU Project T.E.A.M.
- Contact

Part of the School of  
Physical Sciences



## Welcome to OMA

The Optimization of Medical Accelerators (OMA) is the goal of this new network within the Horizon 2020 Marie Skłodowska-Curie European Training Network scheme.



## Our Network

We work with leading research centres, universities and industry partners.

[Find out more](#)



## Vacancies

Find out more about vacancies and how to apply.

[View Vacancies](#)

## News

OMA Steering Committee meets at GSI

Researcher Careers Workshop in Krakow

OMA Coordinator announced as Head of Liverpool Physics

QUASAR Group Overrun by School Children

Research presented in the Land of the Morning Calm



UNIVERSITY OF  
LIVERPOOL

*S.J. Colosimo – Advanced School on Medical Accelerators and Particle Therapy– 1st April 2019*





# Welcome

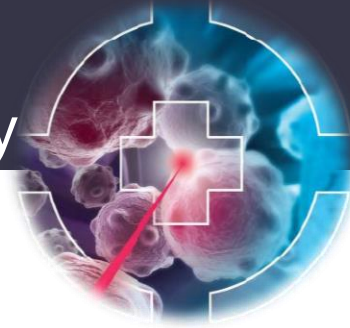
## OMA Advanced School on *Medical Accelerators and Particle Therapy*

**Samantha J. Colosimo**  
University of Liverpool / Cockcroft Institute





# Advanced School on Medical Accelerators and Particle Therapy



## Lecture Topics

### Monday

- State of the art medical treatment modalities, challenges and future trends
- Diagnostics for medical accelerators
- Radiobiology in a research or lab environment
- Radiobiology for real patients

### Tuesday

- Dosimetry and related detector R&D
- Monte Carlo simulations into cell physics
- Ion beam imaging (Proton CT)
- Machine QA
- Medical imaging techniques

### Wednesday

- Relative Biological Effectiveness comparison and impact analysis
- Treatment planning I : How to identify best dose distribution,
- Treatment planning II: How to Deliver Specific Dose
- Real-time In-Vivo Dosimetry and Range Verification

### Thursday

- MR-guided p-therapy
- 4D motion manage
- Treatment Planning via NTCP Models
- Seminar: Novel Accelerators

### Friday

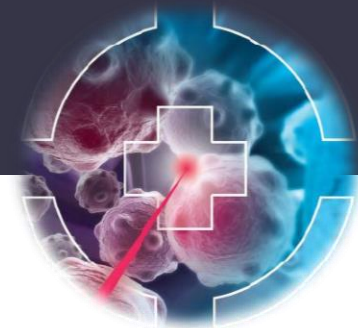
- Improving range accuracy in particle therapy
- Strategies for patient specific QA pre-treatment
- Treatment workflow - hospital expert perspective







# Practical information

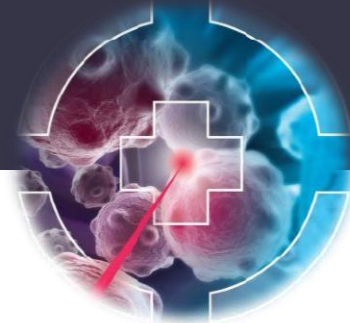


Monday 01/04/2019, TU Vienna	Tuesday 02/04/2019, TU Vienna	Wednesday 03/04/2019, TFZ	Thursday 04/04/2019, TU Vienna	Friday 05/04/2019, TU Vienna
9:30 - School	8:30 - School	7:30 – <i>Bus Transfer</i>	8:30 - School	8:30 - School
10:30 – <i>Coffee</i>	10:30 – <i>Coffee</i>	8:30 - School	10:30 – <i>Coffee</i>	10:30 – <i>Coffee</i>
11:00 – School	11:00 – School	10:30 – <i>Coffee</i>	11:00 – School	11:00 – School
13:00 – <i>Lunch</i>	13:00 – <i>Lunch</i>	11:00 – School	13:00 – <i>Lunch</i>	13:00 - Finish
14:30 – School	14:30 – School	13:00 – <i>Lunch</i>	14:30 – School	
16:30 – <i>Coffee</i>	16:30 – Finish	14:30 – Tour	16:30 – <i>Coffee</i>	
18:00 – Finish	<b>19:00 - Public Talk</b>	17:15 – <i>Bus Transfer</i>	18:00 – Finish	
			<b>20:30 – Formal Dinner</b>	





# Practical information



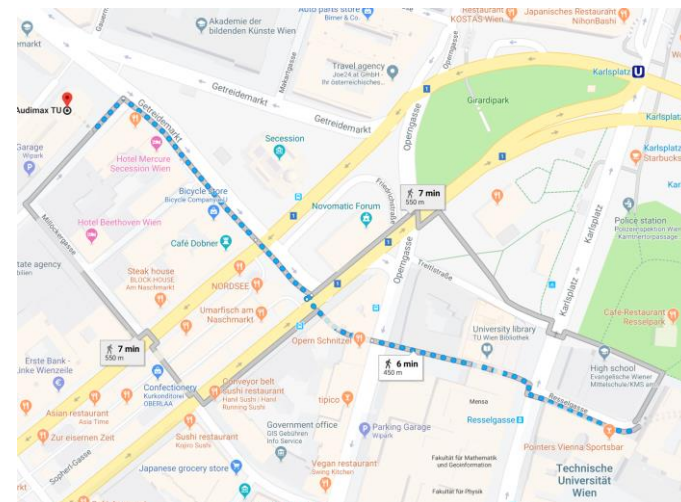
Tuesday 2<sup>nd</sup> April: Public Lecture

19:00, Audimax TU Wien

Abendvortrag  
**Was bringt Ionentherapie wirklich?**  
*Klinische Erfahrung der letzten Jahre am  
MedAustron Ionentherapiezentrum*



**Dr Carola Lütgendorf-Caucig**  
Fachärztin für Radioonkologie bei MedAustron



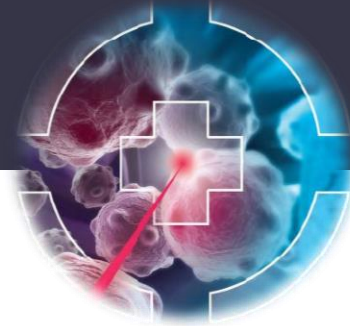
UNIVERSITY OF  
**LIVERPOOL**

S.J. Colosimo – Advanced School on Medical Accelerators and Particle Therapy– 1st April 2019





# Practical information



## Wednesday 3<sup>rd</sup> April: Visit to MedAustron

### **TFZ Wiener Neustadt**

Viktor Kaplan Strasse 2,  
2700 Wiener Neustadt, Austria

**7:30 Bus Transfer** from Parking Bay Karlsplatz (Friedrichstrasse 12, 1010 Vienna) to TFZ Wiener Neustadt

9:00 - 15:00 School

*Coffee and Lunch at Café Bistro Laborie*

15:00: Radiation Protection Instruction by Lukas Jägerhofer at TFZ

15:15 – 17:00 Participants divided into groups of 20 for guided tour of MedAustron

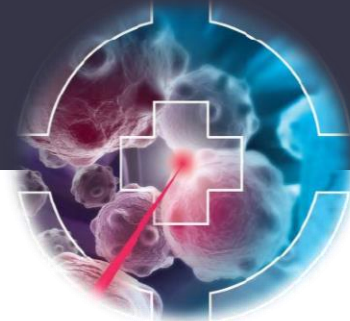
**17:00 Bus Transfer to Vienna**







# Practical information



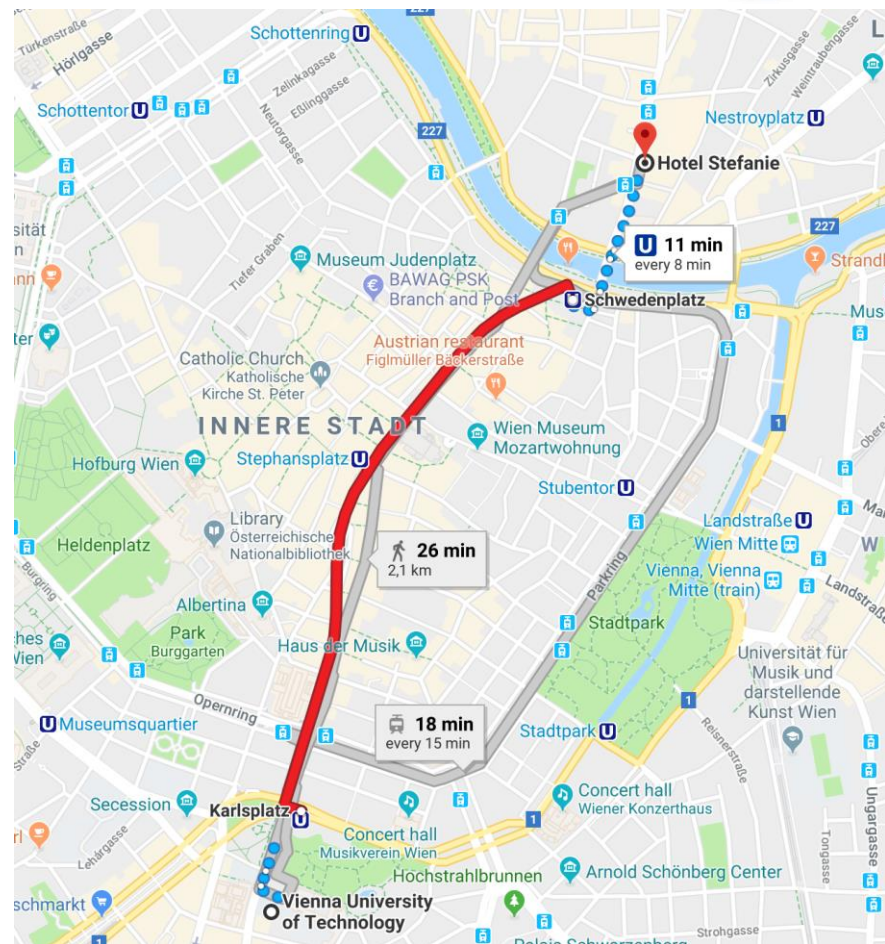
## Thursday 3<sup>rd</sup> April: Formal Dinner

20:30

Hotel Stefanie

Taborstraße 12, 1020 Wien

**\*\* Dress code smart**



UNIVERSITY OF  
LIVERPOOL

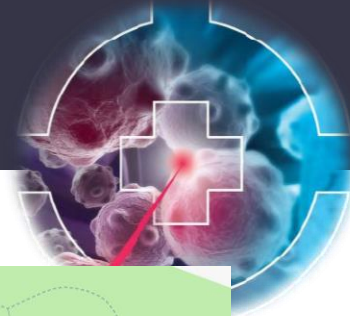
*S.J. Colosimo – Advanced School on Medical Accelerators and Particle Therapy– 1st April 2019*





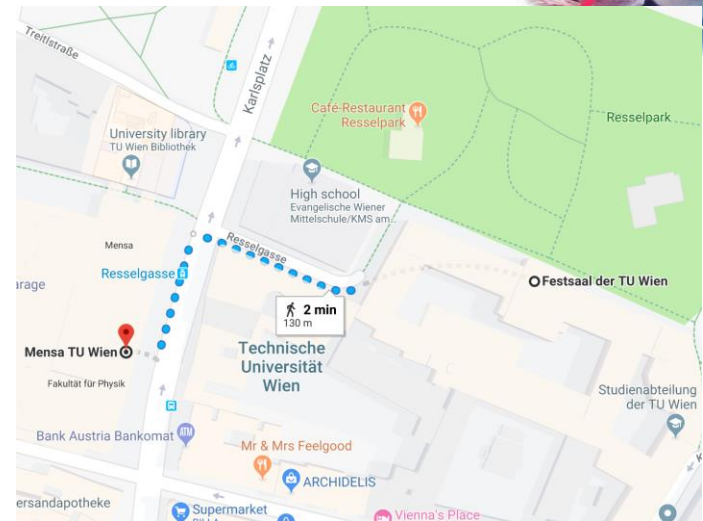


# Practical information



- **Lunch: *TU Wien Mensa***

- *Obtain voucher from registration.*
- *Each day: soup, main and side, drink.*



- **Thursday 3<sup>rd</sup> April: Poster Session**

- *14:30 – 16:30, First Floor Foyer*

- **Local support:**

- Samantha Colosimo: [s.colosimo@liverpool.ac.uk](mailto:s.colosimo@liverpool.ac.uk), +44 7791941666
- Andrea De Franco: +43 664 80878868

